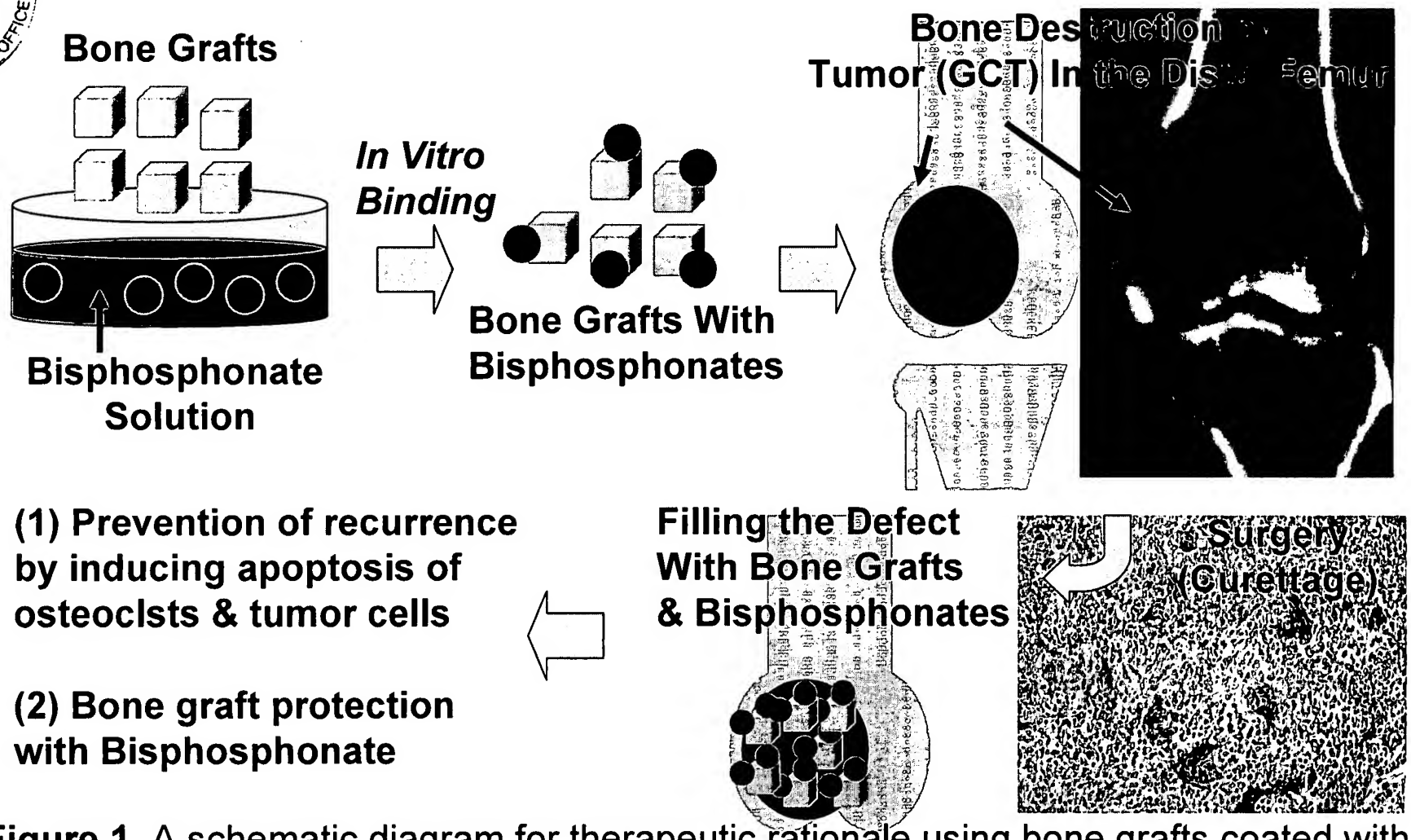

Figure 1. A schematic diagram for therapeutic rationale using bone grafts coated with Bisphosphonate solution. Bone tumors induce osteoclast (tumor giant cells) formation. Osteoclasts destroy bone. Bisphosphonate-Bone Graft composite ( ) can induce apoptosis in giant cell tumors (GCT) & other tumor cells, prevent recurrence and protect bone graft resorption.

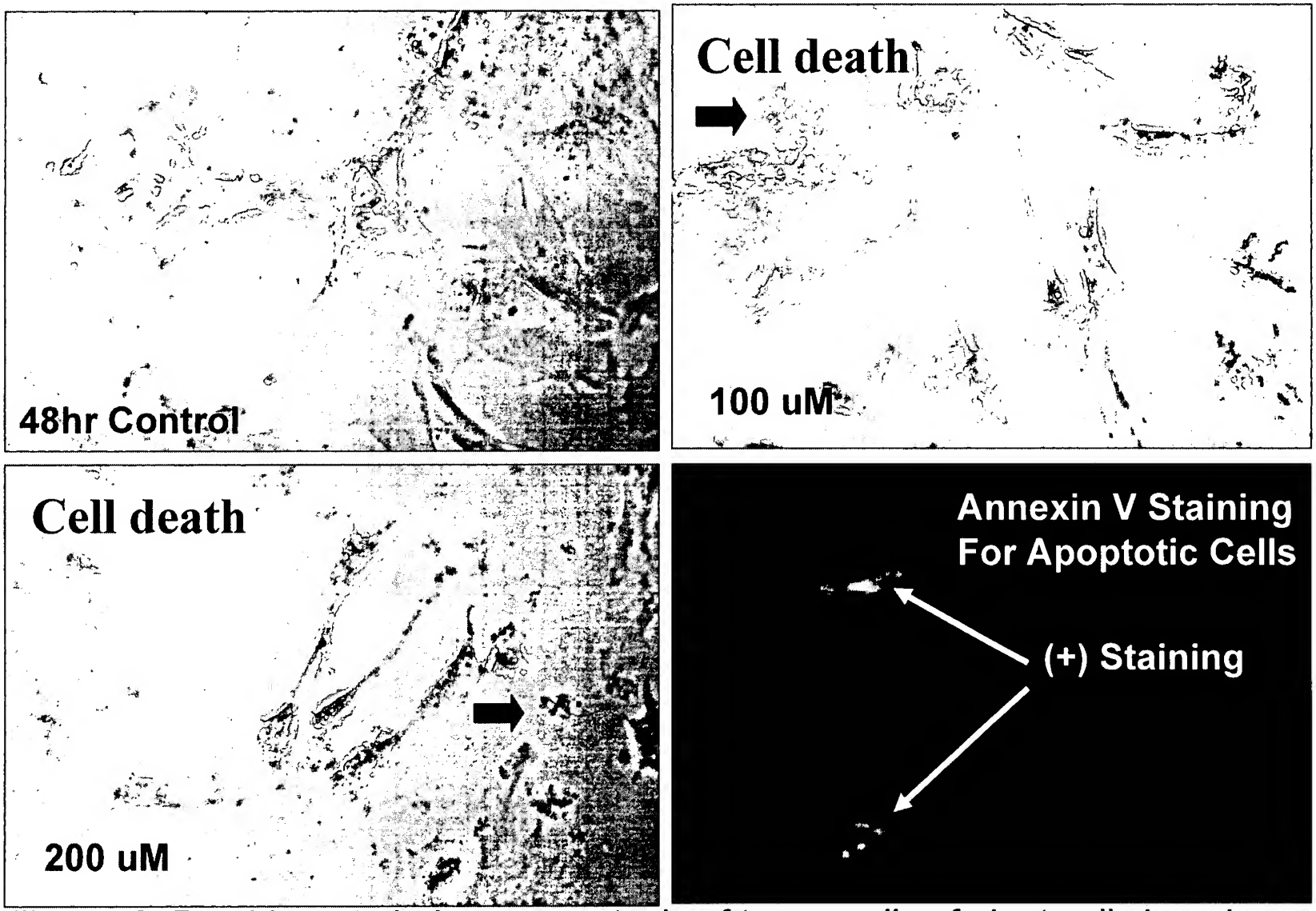

Figure 2. Pamidronate induces apoptosis of tumor cells of giant cells in a dose dependent manner. The control picture shows plumpy, polyhedral cytoplasm. Addition of 100 & 200 uM of Pamidronate induces cell death. Annexin V staining indicates apoptosis of tumor cells.

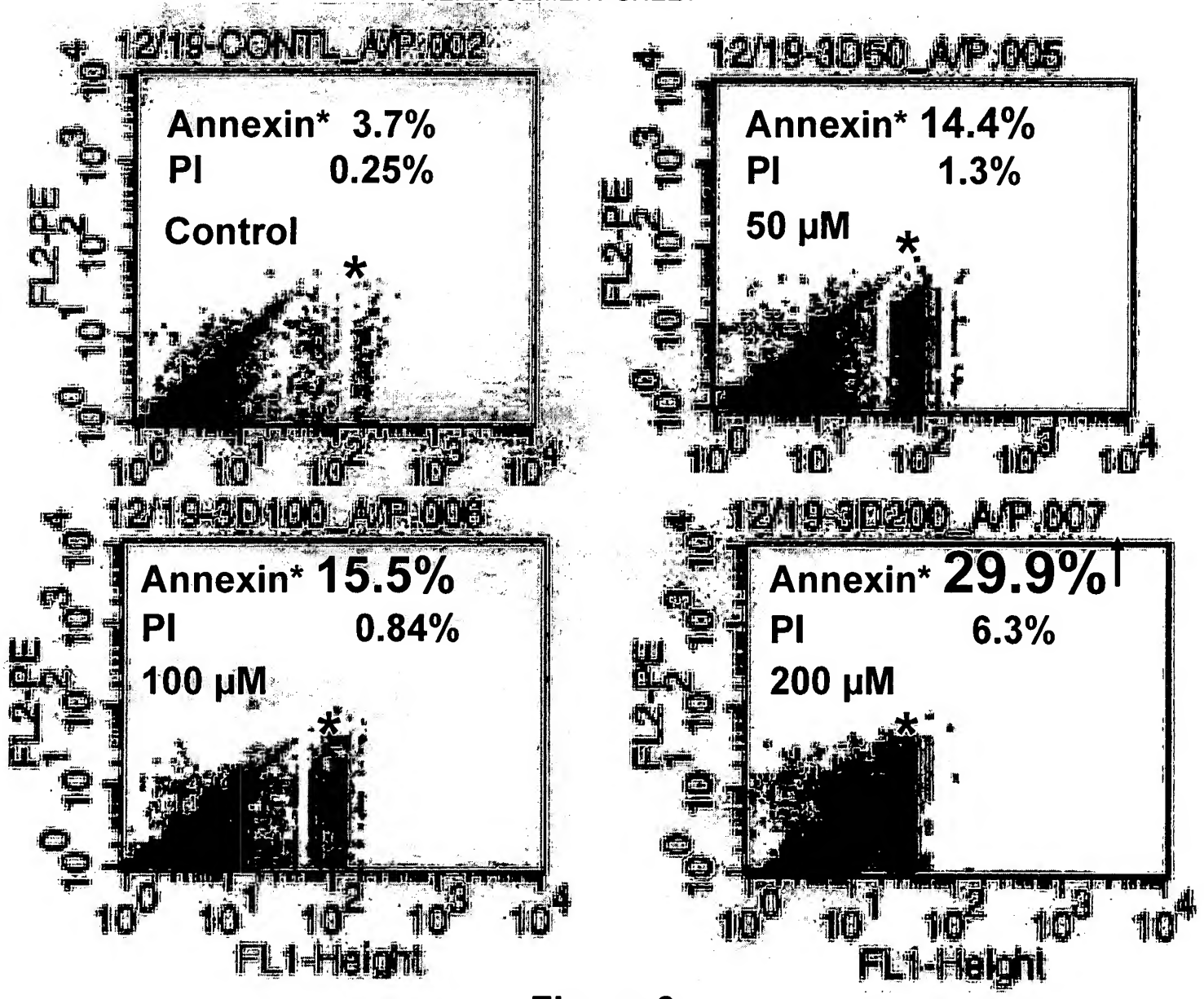
12/19-CONTL_A/P.002
Annexin* 3.7%
PI 0.25%
Control
12/19-3D50_A/P.005
Annexin* 14.4%
PI 1.3%
50 µM
12/19-3D100_A/P.006
Annexin* 15.5%
PI 0.84%
100 µM
12/19-3D200_A/P.007
Annexin* 29.9%
PI 6.3%
200 µM
FL2-PE
FL1-Height

Figure 3

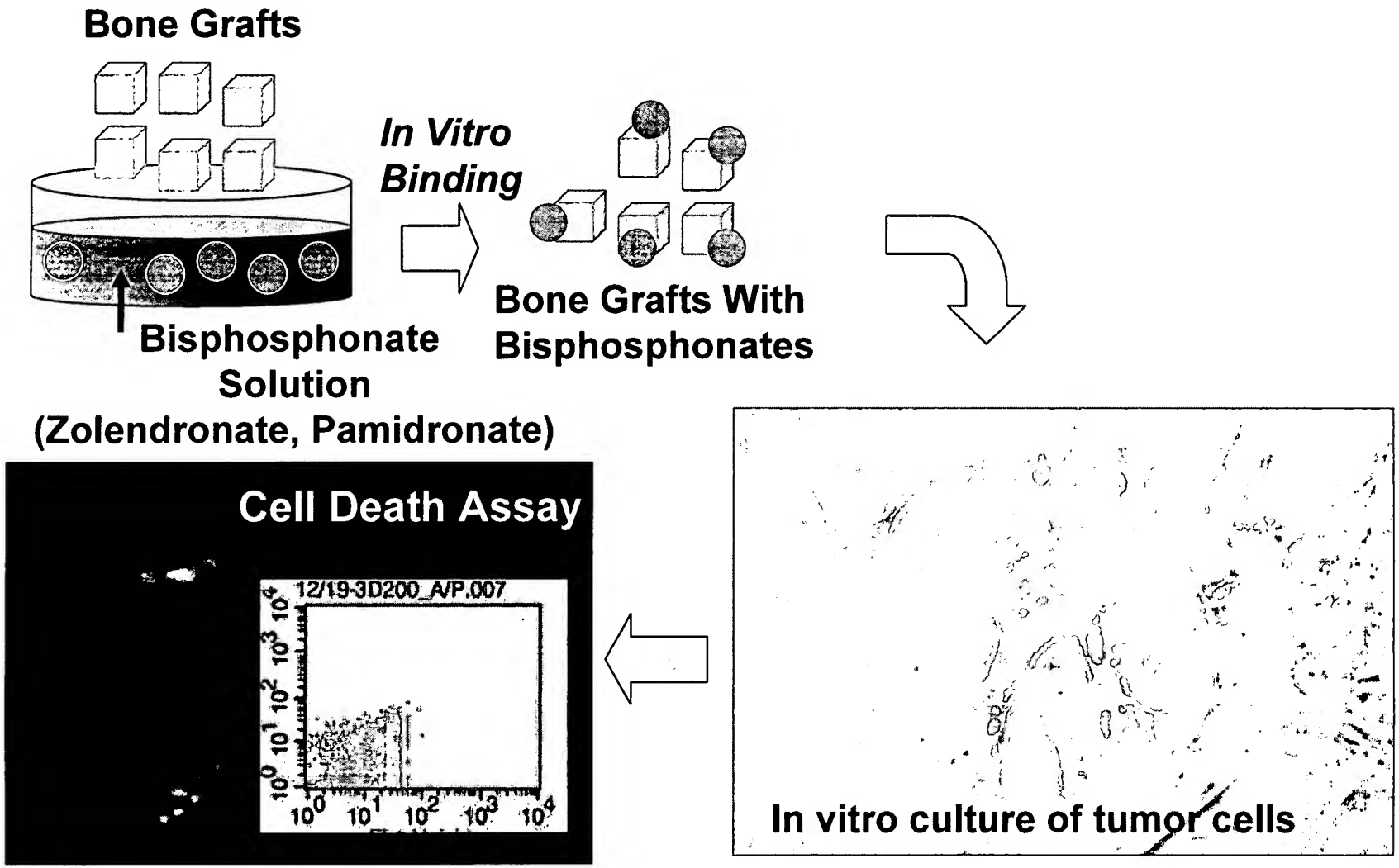

Figure 4. The effect of Bisphosphonate-Bone Graft Composite on the Giant Cell Tumor and Unicameral Bone Cyst in vitro